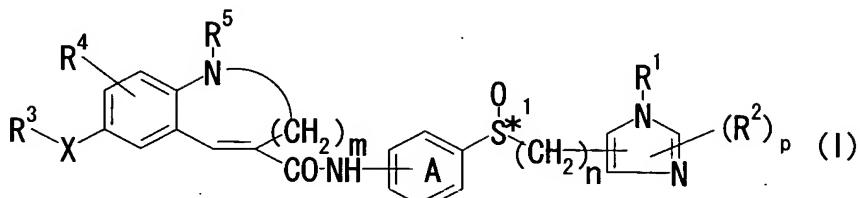


CLAIMS

1. A process for preparing an optically active compound represented by the formula (I):



5

wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

R³ represents an optionally substituted 5- or 6-membered ring; R⁴ represents a hydrogen atom, an optionally substituted lower alkyl group, an optionally substituted lower alkoxy group or a halogen atom;

R⁵ represents a hydrogen atom, an optionally

substituted hydrocarbon group, an optionally substituted heterocyclic group, an optionally substituted sulfonyl group, an esterified or amidated carboxyl group or an optionally substituted acyl group;

5 X represents a bond or a divalent group containing a linear part constituted of 1 to 4 atoms;

 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

10 group which may be substituted with a halogen atom;

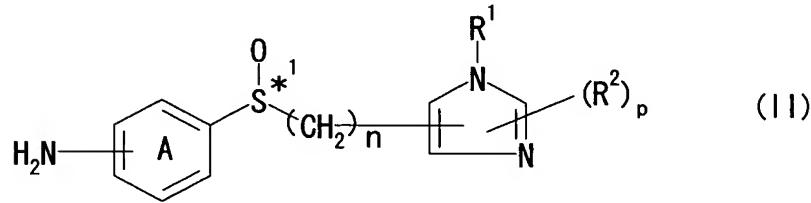
 m is an integer of 1 to 5;

 n represents an integer of 0 to 3;

 p represents an integer of 0 to 2; and

 *¹ represents an asymmetric center,

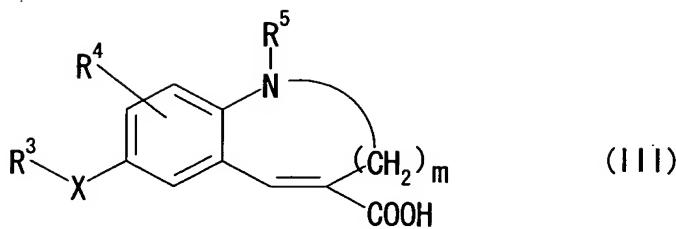
15 or a salt thereof, which comprises reacting an optically active compound represented by the formula (II):



 wherein each symbol is as defined above,

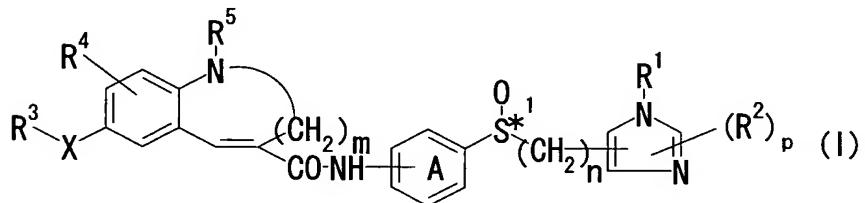
 or a salt thereof, with a compound represented by the

20 formula (III):



wherein each symbol is as defined above, a salt thereof, or a reactive derivative thereof.

2. A process for preparing an optically active compound represented by the formula (I):



wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

R³ represents an optionally substituted 5- or 6-

membered ring;

R^4 represents a hydrogen atom, an optionally substituted lower alkyl group, an optionally substituted lower alkoxy group or a halogen atom;

5 R^5 represents a hydrogen atom, an optionally substituted hydrocarbon group, an optionally substituted heterocyclic group, an optionally substituted sulfonyl group, an esterified or amidated carboxyl group or an optionally substituted acyl group;

10 X represents a bond or a divalent group containing a linear part constituted of 1 to 4 atoms;

the ring A represents a benzene ring which may be substituted with a halogen atom, a C_{1-4} alkyl group which may be substituted with a halogen atom or a C_{1-4} alkoxy

15 group which may be substituted with a halogen atom;

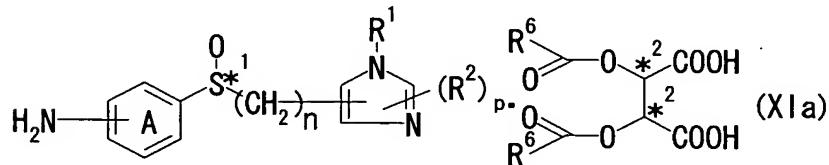
m is an integer of 1 to 5;

n represents an integer of 0 to 3;

p represents an integer of 0 to 2; and

*1 represents an asymmetric center,

20 or a salt thereof, which comprises reacting an optically active compound represented by the formula (XIa):



wherein R^6 represents a methyl group, a phenyl group,

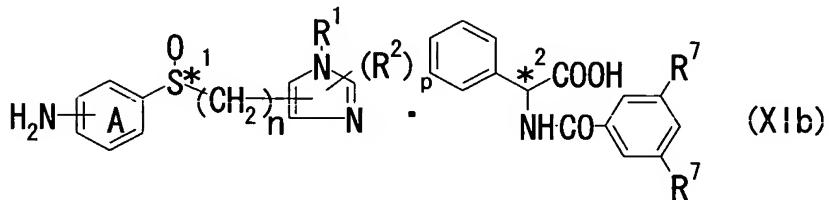
a 4-methylphenyl group or a α -naphthyl group;

*2 represents an asymmetric center; and

the other symbols are as defined above,

or an optically active compound represented by the formula

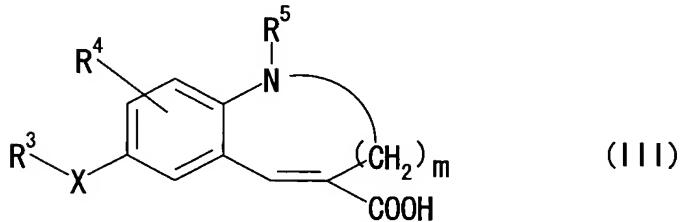
5 (XIb) :



wherein R^7 represents a hydrogen atom, a chlorine atom or a nitro group; and

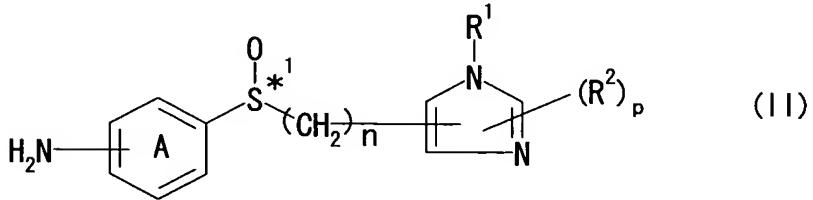
the other symbols are as defined above,

10 with a compound represented by the formula (III):



wherein each symbol is as defined above, a salt thereof or a reactive derivative thereof.

3. An optically active compound represented by the
15 formula (II):



wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

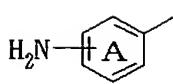
n represents an integer of 0 to 3;

p represents an integer of 0 to 2; and

*¹ represents an asymmetric center, or a salt thereof.

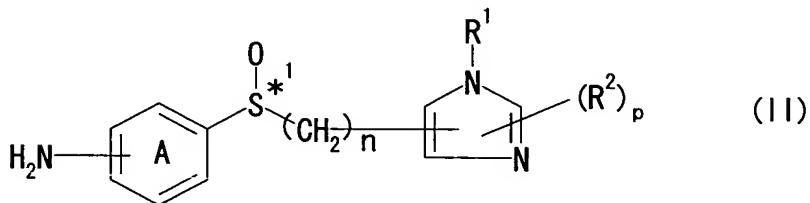
4. The optically active compound according to claim 3, wherein R¹ and R² each represents a C₁₋₆ alkyl group; and n represents 1 or 2, or a salt thereof.

5. The optically active compound according to claim 3, wherein R¹ represents a C₁₋₆ alkyl group; p represents 0; n represents 1; and



represents , or a salt thereof.

6. A process for preparing an optically active compound represented by the formula (II):



5 wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

10 R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an 15 optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

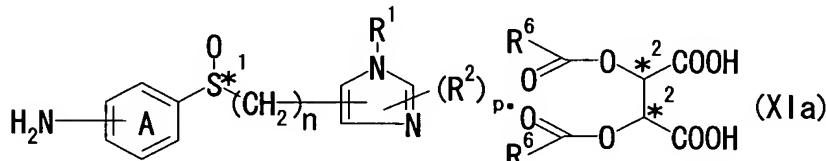
20 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

n represents an integer of 0 to 3;

p represents an integer of 0 to 2; and

*¹ represents an asymmetric center,

or a salt thereof, which comprises subjecting an optically active compound represented by the formula (XIa):

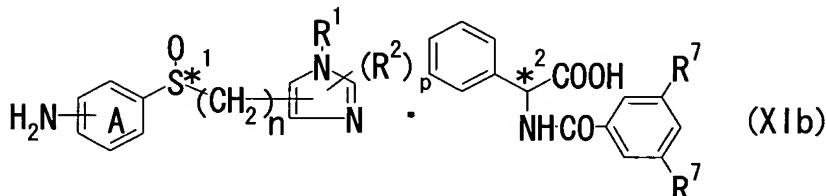


wherein R⁶ represents a methyl group, a phenyl group, a 4-methylphenyl group or a α -naphthyl group;

*² represents an asymmetric center; and

the other symbols are as defined above,

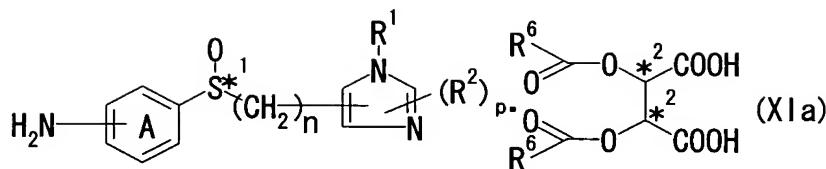
10 or an optically active compound represented by the formula (XIb):



wherein R⁷ represents a hydrogen atom, a chlorine atom or a nitro group; and

15 the other symbols are as defined above,
to a metathesis reaction.

7. An optically active compound represented by the formula (XIa):



wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

5 R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

10

15 R⁶ represents a methyl group, a phenyl group, a 4-methylphenyl group or a α -naphthyl group;

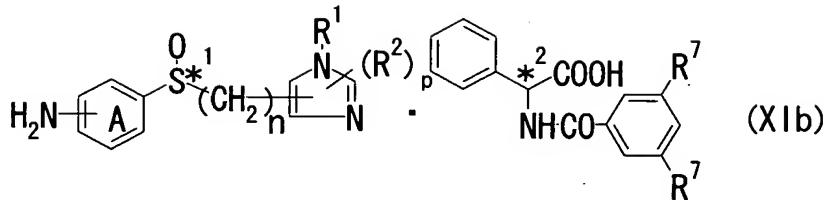
the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

20 n represents an integer of 0 to 3;

p represents an integer of 0 to 2; and

*¹ and *² each represents an asymmetric center, or an optically active compound represented by the formula

(XIb) :

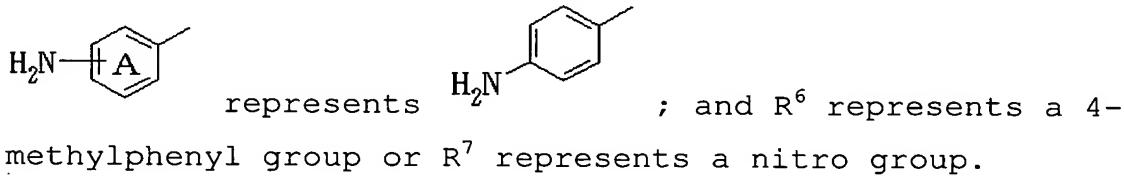


wherein R⁷ represents a hydrogen atom, a chlorine atom or a nitro group; and

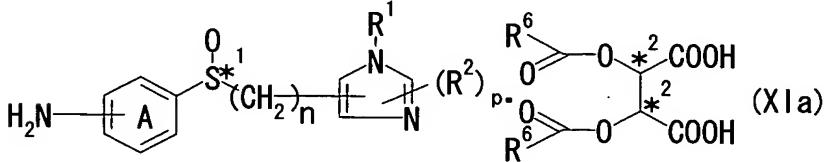
5 the other symbols are as defined above.

8. The optically active compound according to 7, wherein R¹ and R² each represents a C₁₋₆ alkyl group; n represents 1 or 2; and R⁶ represents a 4-methylphenyl group or R⁷ represents a nitro group.

10 9. The optically active compound according to 7, wherein R¹ represents a C₁₋₆ alkyl group; p represents 0; n represents 1;



15 10. A process for preparing an optically active compound represented by the formula (XIa):



wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally

substituted aromatic group;

R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

R⁶ represents a methyl group, a phenyl group, a 4-methylphenyl group or a α -naphthyl group;

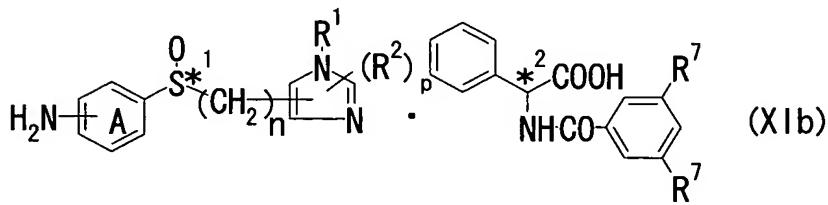
the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

n represents an integer of 0 to 3;

p represents an integer of 0 to 2; and

*¹ and *² each represents an asymmetric center,

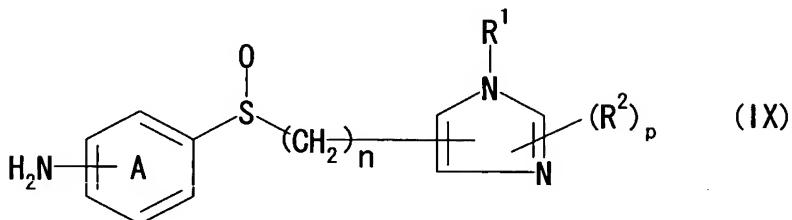
or the formula (XIb):



wherein R⁷ represents a hydrogen atom, a chlorine atom

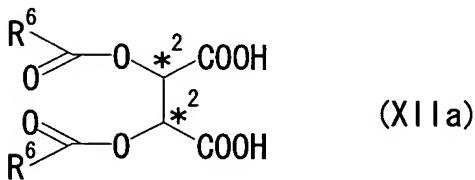
or a nitro group; and

the other symbols are as defined above,
which comprises subjecting a compound represented by the
formula (IX):



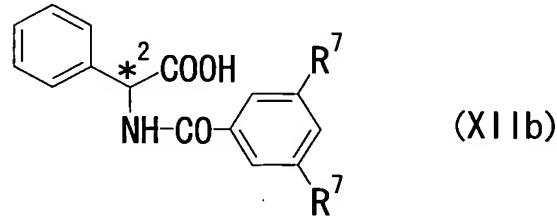
5

wherein each symbol is as defined above,
or a salt thereof, to optical resolution with an optically
active compound represented by the formula (XIIa):



10

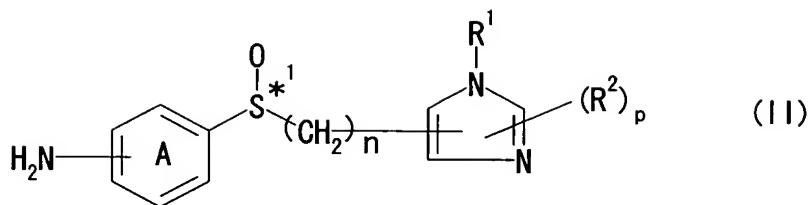
wherein each symbol is as defined above,
or an optically active acid represented by the formula
(XIIb):



wherein each symbol is as defined above.

15

11. A process for preparing an optically active
compound represented by the formula (II):



wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

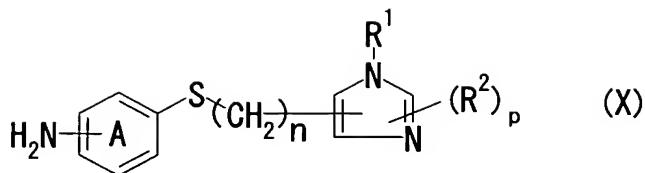
5 R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

10 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

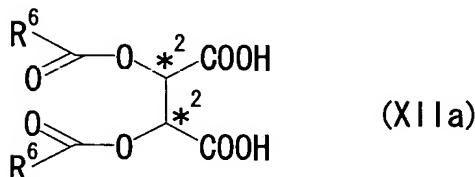
15 n represents an integer of 0 to 3;

p represents an integer of 0 to 2; and

20 *¹ represents an asymmetric center, or a salt thereof, which comprises oxidizing a compound represented by the formula (X):



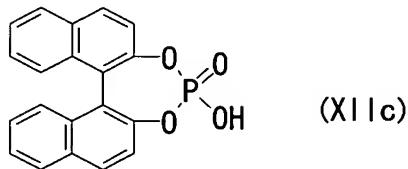
wherein each symbol is as defined above,
 or a salt thereof in the presence of an optically active
 compound represented by the formula (XIIa):



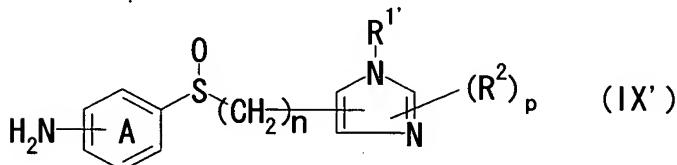
5

wherein R^6 represents a methyl group, a phenyl group,
 a 4-methylphenyl group or a α -naphthyl group; and
 *2 represents an asymmetric center,

or an acid which is optically active with respect to axial
 10 asymmetry, and represented by the formula (XIIc):



12. A compound represented by the formula (IX'):



wherein $\text{R}^{1'}$ represents an optionally substituted
 15 aliphatic hydrocarbon group or an optionally substituted
 aromatic group;

R^2 represents a halogen atom, a nitro group, a cyano

group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that

5 may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

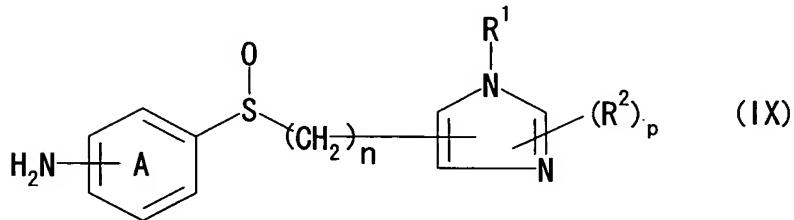
10 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

n represents an integer of 0 to 3; and

p represents an integer of 0 to 2,

15 or a salt thereof.

13. A process for preparing a compound represented by the formula (IX):



20 wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

R² represents a halogen atom, a nitro group, a cyano

group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that

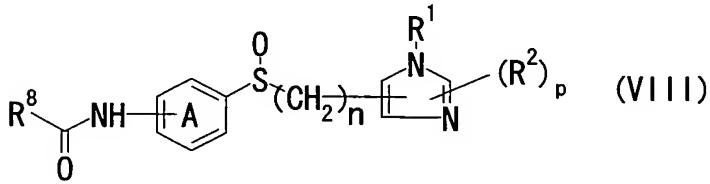
5 may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

10 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

n represents an integer of 0 to 3; and

p represents an integer of 0 to 2,

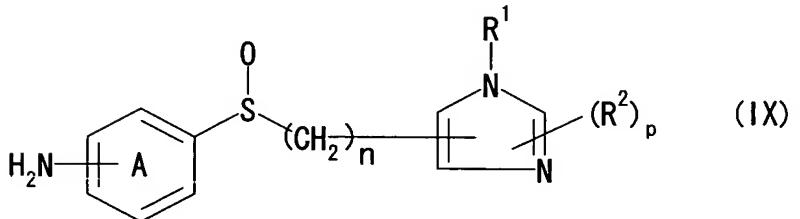
15 or a salt thereof, which comprises subjecting a compound represented by the formula (VIII):



20 wherein R⁸ represents a hydrogen atom, an optionally substituted lower alkyl group, an optionally substituted aryl group, an optionally substituted aralkyl group or -OR¹⁰ wherein R¹⁰ represents an optionally substituted lower alkyl group, an optionally substituted aryl group or an optionally substituted aralkyl group; and

the other symbols are as defined above,
or a salt thereof, to a deprotection reaction.

14. A process for preparing a compound represented by
the formula (IX):



5

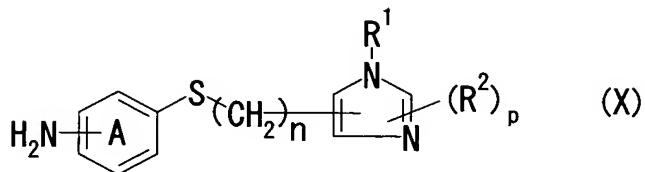
wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

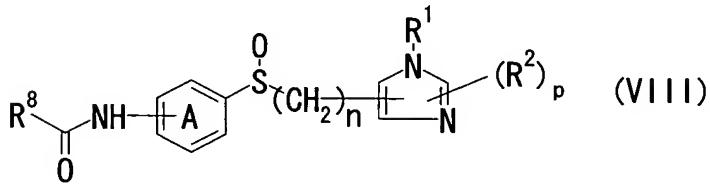
n represents an integer of 0 to 3; and

p represents an integer of 0 to 2,
 or a salt thereof, wherein a compound represented by the formula (X) :



5 wherein each symbol is as defined above,
 or a salt thereof is oxidized.

15. A compound represented by the formula (VIII):



10 wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

15 R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

20 R⁸ represents a hydrogen atom, an optionally

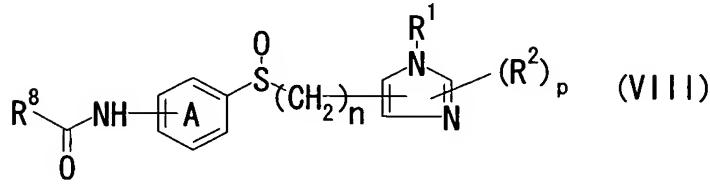
substituted lower alkyl group, an optionally substituted aryl group, an optionally substituted aralkyl group or -
 OR¹⁰ wherein R¹⁰ represents an optionally substituted lower alkyl group, an optionally substituted aryl group or an
 5 optionally substituted aralkyl group;

the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

10 n represents an integer of 0 to 3; and

 p represents an integer of 0 to 2,
 or a salt thereof.

16. A process for preparing a compound represented by the formula (VIII):



15

wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

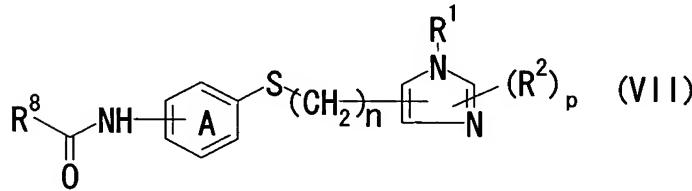
20 R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that

may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

5 R⁸ represents a hydrogen atom, an optionally substituted lower alkyl group, an optionally substituted aryl group, an optionally substituted aralkyl group or -OR¹⁰ wherein R¹⁰ represents an optionally substituted lower alkyl group, an optionally substituted aryl group or an 10 optionally substituted aralkyl group;

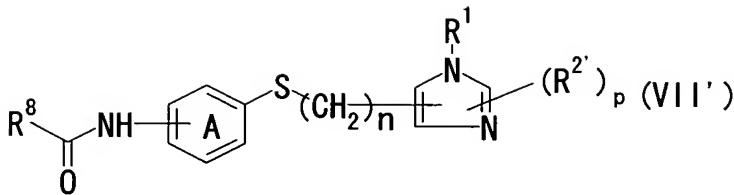
 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

15 n represents an integer of 0 to 3; and
 p represents an integer of 0 to 2,
 or a salt thereof, which comprises oxidizing a compound represented by the formula (VII):



20 wherein each symbol is as defined above,
 or a salt thereof.

17. A compound represented by the formula (VII'):



wherein R^1 represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

5 $\text{R}^{2'}$ represents a halogen atom, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that 10 may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

15 R^8 represents a hydrogen atom, an optionally substituted lower alkyl group, an optionally substituted aryl group, an optionally substituted aralkyl group or -OR¹⁰ wherein R¹⁰ represents an optionally substituted lower alkyl group, an optionally substituted aryl group or an optionally substituted aralkyl group;

20 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy

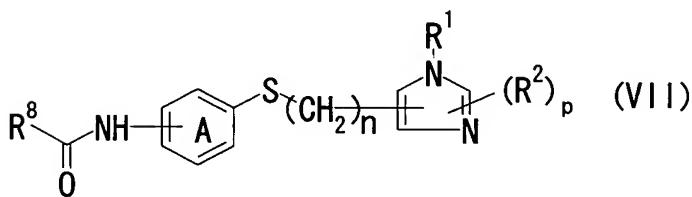
group which may be substituted with a halogen atom;

n represents an integer of 0 to 3; and

p represents an integer of 0 to 2,

or a salt thereof.

5 18. A process for preparing a compound represented by
the formula (VII):



wherein R^1 represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

10 R^2 represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the
15 sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

20 R^8 represents a hydrogen atom, an optionally substituted lower alkyl group, an optionally substituted aryl group, an optionally substituted aralkyl group or -

OR¹⁰ wherein R¹⁰ represents an optionally substituted lower alkyl group, an optionally substituted aryl group or an optionally substituted aralkyl group;

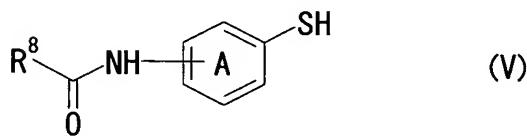
the ring A represents a benzene ring which may be

5 substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

n represents an integer of 0 to 3; and

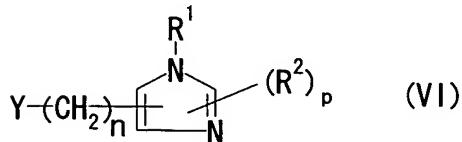
p represents an integer of 0 to 2,

10 or a salt thereof, which comprises reacting a compound represented by the formula (V):



wherein each symbol is as defined above,

or a salt thereof, with a compound represented by the
15 formula (VI):

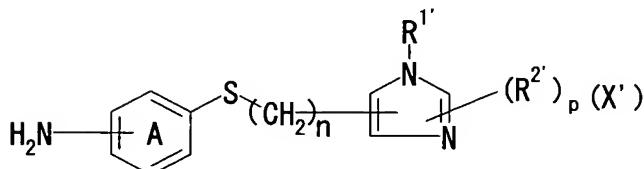


wherein Y represents a halogen atom or a group represented by the formula -OSO₂-R⁹ wherein R⁹ represents a lower alkyl group or an optionally substituted aryl group;
20 and

the other symbols are as defined above,

or a salt thereof.

19. A compound represented by the formula (X'):



5 wherein R¹' represents an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

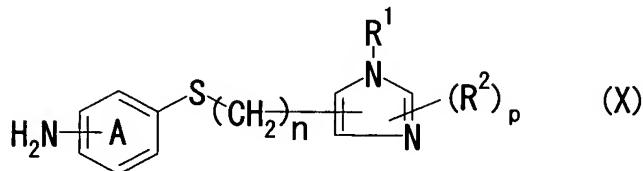
10 R²' represents a halogen atom, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an 15 optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

20 the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

 n represents an integer of 0 to 3; and

 p represents an integer of 0 to 2,
or a salt thereof.

20. A process for preparing a compound represented by the formula (X):



wherein R¹ represents a hydrogen atom, an optionally substituted aliphatic hydrocarbon group or an optionally substituted aromatic group;

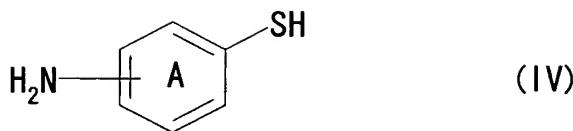
R² represents a halogen atom, a nitro group, a cyano group, an optionally substituted alkyl group, an optionally substituted cycloalkyl group, an optionally substituted hydroxyl group, an optionally substituted thiol group (the sulfur atom may be oxidized to form a sulfinyl group that may be substituted or a sulfonyl group that may be substituted), an optionally substituted amino group, an optionally substituted acyl group, an optionally esterified carboxyl group or an optionally substituted aromatic group;

the ring A represents a benzene ring which may be substituted with a halogen atom, a C₁₋₄ alkyl group which may be substituted with a halogen atom or a C₁₋₄ alkoxy group which may be substituted with a halogen atom;

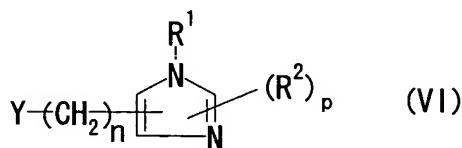
n represents an integer of 0 to 3; and

p represents an integer of 0 to 2,

or a salt thereof, which comprises reacting a compound represented by the formula (IV):



wherein the ring A is as defined above,
 or a salt thereof, with a compound represented by the
 formula (VI):



wherein Y represents a halogen atom or a group
 represented by the formula $-\text{OSO}_2-\text{R}^9$ wherein R^9 represents a
 lower alkyl group or an optionally substituted aryl group;
 and

10 the other symbols are as defined above,
 or a salt thereof.